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### PROCEEDINGS

OF THE

# BIOLOGICAL SOCIETY OF WASHINGTON.



WITH REMARKS ON THE VALIDITY OF THE GENUS TEONOMA OF GRAY.

BY C. HART MERRIAM, M. D.

The two new mammals herein described are of unusual interest, not only because they are very distinct from any heretofore recognized, but also because they inhabit a region that has been pretty thoroughly explored during the past few years, and from which an unusually large number of mammals have been already described.\*

One of the new species (N. arizonæ) presents a remarkable combination of the external characters of the bushy-tailed wood rats (genus Teonoma of Gray) with the cranial characters of the round-tailed species (Neotoma proper). The other (N. pinetorum), is a round-tailed species allied to the N. fuscipes group of California. Incidentally, the study of N. arizonæ led to the discovery of an important character that serves to distinguish Teonoma from Neotoma.

<sup>\*</sup>No less than twenty new species and subspecies were discovered in my biological survey of the San Francisco Mountain region in Arizona in 1889 (see N. Am. Fauna, No. 3, Sept., 1899); and others have been described from the same general region by Dr. Edgar A. Mearns and Dr. J. A. Allen.

#### Neotoma arizonæ sp. nov.

Type from Keams Cañon, Apache county, Arizona. No.  $^{4249}_{080}$   $\,$  ad. Merriam collection. Collected by J. Sullivan May 21, 1888.

General Characters.—Tail bushy as in Neotoma cinerca, but narrower; animal similar to N. cinerca in general appearance, but smaller, and agreeing with the round-tailed species in important cranial characters. Ears large, measuring about 34 mm. from anterior base; whiskers long and coarse, reaching shoulders. Total length about 365 mm.; hind foot about 35 mm. (in an old male from the same locality the hind foot measures 39 mm.). Except for its superficial resemblance to N. cinerca, this animal needs no comparison with any known species.

Color.—Upper parts everywhere bright ochraceous-buff, moderately mixed with black-tipped hairs; under parts and feet pure white. Tail bicolor: grayish brown above, white below.

Cranial and Dental Characters.—Skull smaller and much shorter than that of N. cinerea, with shorter nasals and nasal branches of premaxillaries, and larger and much more inflated audital bulke. The most important cranial character, however, contrasted with N. cinerea, is the presence of a broad slit-like opening on each side of the presphenoid and anterior third of the basisphenoid, as in the round-tailed species generally. In the bushy-tailed N. cinerea this slit is completely closed by the ascending wings of the palatine bones. The molar teeth are actually as large as and relatively larger than in N. cinerea. The enamel pattern of the last upper molar is a nearly perfect trefoil, though the posterior reëntrant angle on the outer side is shallower than the anterior.

Variation.—The males are considerably larger than the females, and the young are gray in color, as usual in the genus. The Keams Cañon specimens are very uniform in color. An immature male from Tres Piedras, Taos County, New Mexico, collected by J. Alden Loring July 4, 1892 (No. 53016, United States National Museum, Department of Agriculture collection), has the upper parts gray, tinged with buffy-ochraceous, and the white of the under parts clouded posteriorly from the plumbeous of the under fur. A specimen from Fort Wingate, New Mexico, collected by Dr. R.W. Shufeldt (No. 3358 &, Merriam collection) is a little older, but evidently not adult. It has the upper parts more strongly suffused with pale ochraceous and the belly white. Its tail is less bushy than any of the other specimens examined. A young-adult female, collected at Winslow, Arizona, by Clark

P. Streator (No. 53517, United States National Museum, Department of Agriculture collection) has the under parts stained a deep salmon pink from the soil. This color washes out, leaving the belly pure white as in the Keams Canon specimens.

Geographic Distribution and Faunal Position.—Neotoma arizona inhabits the Tusayan or Moki district in eastern Arizona, and adjacent parts of the Painted Desert on the west, and New Mexico on the east. In all, eleven specimens have been examined: eight from the Moki country, one from Winslow in the Painted Desert, one from Tres Piedras in northern New Mexico, and one from Fort Wingate, near the western border of New Mexico. The species evidently belongs to the Upper Sonoran zone.

#### Neotoma pinetorum sp. nov.

Type from San Francisco Mountain, Arizona. No.  $\frac{1}{2}\frac{7}{4}\frac{6}{6}\frac{2}{8}$  and United States National Museum, Department of Agriculture collection. Collected by Vernon Bailey August 16, 1889 (original number, 366).

Measurements of Type Specimen (taken in flesh).—Total length, 355; tail vertebræ, 163; hind foot, 37; ear from anterior base, 25 (measured in dry skin). Average measurements of four adult specimens—total length, 362; tail vertebæ, 166; hind foot, 36.7.

General Characters.—Similar to N. fuscipes from southern California, but averaging slightly smaller; tail, ears, and hind feet shorter; tail more hairy; hind feet pure white [not clouded with dusky as in N. fuscipes]; back more strongly suffused with fulvous; whiskers long, reaching shoulders.

Color.—Upper parts fulvous, strongly mixed with black-tipped hairs; face from nose to above eyes gray, slightly grizzled, color of upper parts stopping at (or above) wrists and at ankles; under parts and feet white; tail sharply bicolor, above blackish, below white. Other specimens are less strongly fulvous, and the young are gray.

Cranial and Dental Characters.—Skull similar to that of the southern form of N. fuscipes but broader; brain case broader and shorter; palate and inter-pterygoid fossa longer; teeth larger (both molars and incisors).

General Remarks.—In my report on the mammals of San Francisco Mountain, Arizona, I referred the wood rat of the region to Neotoma mexicana of Baird.\* At that time no typical specimens of mexicana were available for comparison. Since then, however, 14 specimens have been secured from the type locality, Chihuahua city, Mexico.

<sup>\*</sup> North Am. Fauna, No. 3, Sept., 1890, p. 67, pl. x, figs. 5-8 (skull).

On reëxamining the specimens from San Francisco Mountain and comparing them with the duplicate types of N. mexicana they are found to be widely dissimilar, not only in external appearance, but also in cranial and dental characters. Singularly enough, the new species resembles N. fuscipes of California much more closely than mexicana. It is an inhabitant of the pine belt at the base of the mountain, and therefore belongs to the Transition zone. Its range probably meets that of N. mexicana, which inhabits the adjacent Painted Desert on the east and the Grand Cañon of the Colorado on the north. The avenue by which its ancestors originally reached the pine plateau region of Arizona becomes a geographic problem of no little interest. Its nearest ally, the southern form of N. fuscipes, is closely restricted to California, and no member of the fuscipes group has ever been reported from the Rocky Mountain region.

# Remarks on the Validity of the Genus Teonoma of Gray.

In 1843 J. E. Gray separated the bushy-tailed wood rats generically from the round-tailed species under the name Teonoma.\* In this arrangement he was followed by Fitzinger in 1867†, but not by other writers. The only character ever assigned the genus Teonoma, so far as I have been able to ascertain, is its bushy tail, in contradistinction to the short-haired terete tail of Neotoma proper. I take pleasure, therefore, in calling attention to an important cranial character which seems to have been overlooked. In the skulls of the round-tailed wood rats there is a long open slit on each side of the presphenoid and anterior third of the basisphenoid. These openings may be designated the sphenopalatine vacuities. In the bushy-tailed species (Neotoma cinerea and N. cinerea occidentalis) these vacuities are absent, being completely closed by the ascending wings of the palatine bones. Whether this character is of generic or subgeneric value may be left an open question for the present; that it is a character of considerable importance cannot be denied.

The most interesting feature connected with the new Neotoma arizona herein described is that while it agrees with Teonoma in the possession of a bushy tail, it has the spheno-palatine vacuities of Neotoma proper.

<sup>\*</sup> List of Specimens of Mammalia in the British Museum, 1843, p. 117. †Sitzungsberichte Math.-Nat., Cl. K. Akad. Wiss Wien, vol. Lvi. Abth. 1, 1867, p. 77.